CLAIMS

1. A gateway (GW; Fig. 5a; Fig. 6) for forwarding
    transmission information (TI, TI', TI'') between a
    first terminal node (CN) of a first network (IN) and a
    second terminal node (RN1-RN4; MN) of an ad hoc
    network (AHN), comprising:

    a)   a transmission/reception unit (TRG) adapted to
          receive transmission information (TI, TI', TI'')
          from said first terminal node (CN) and to
          transmit said transmission information (TI, TI',
          TI'') to said second terminal node (RN1-RN4; MN);
          and

    b)   an acknowledgment information detection unit
          (ACKM) adapted to detect the receipt of
          acknowledgment information (ACTAN, ACTAN',
          ACTAN'') from said second terminal node (RN1-RN4;
          MN) acknowledging that said second terminal
          station (RN1-RN4; MN) has received said
          transmission information (TI, TI', TI'').

2. The gateway (GW; Fig. 6) according to claim 1,
    further characterized by
    an accounting unit (ACC') adapted to determine
    charging information (CH) for the transmission of said
    transmission information (TI, TI', TI'') to said
    second terminal node (RN1-RN4; MN) if said
    acknowledgment information detection unit (ACKM)
    detects the receipt of acknowledgment information
    (ACTAN, ACTAN', ACTAN'') for the transmission of said
    transmission information (TI, TI', TI'') to said
    second terminal station (RN1-RN4; MN).

3. The gateway (GW; Fig. 6) according to claim 1,

further characterized by
a transmission information characteristics determining
unit (TIM) adapted to determine transmission
characteristics (TCH) of the transmission of said
transmission information (TI, TI', TI'') to said
second terminal node (RN1-RN4; MN).

4.   The gateway (GW; Fig. 4a-c) according to claim 1,
further characterized in that
said transmission information characteristics
determining unit (TIM) is adapted to determine as said
transmission characteristics (TCH) one or more
selected from the group consisting of a data amount
(DAM), a transmission speed (TRT), a transmission
route (MR, AR) along which said transmission
information (TI, TI', TI'') has been transmitted to
said second terminal node (RN1-RN4; MN), and a delay
time of the packet transmission.

5.   The gateway (GW; Fig. 4a-c) according to claim 2 and
3,

further characterized in that
said accounting unit (ACC') is adapted to determine
said charging information (CH) on the basis of said
transmission characteristics (TCH).

6.   The gateway (GW; Fig. 4b; Fig. 6) according to claim
4,

further characterized by
a transmission information memory (TIS') adapted to
store one or more selected from the group consisting
of a source address (SAC) and a destination address
(TA) of said transmission information (TI, TI', TI''),
said determined transmission characteristics (TCH),
said determined charging information (CH), and said
acknowledgment information (ACTAN).

7. The gateway (GW; Fig. 5a) according to claim 1,
    further characterized in that
    said second ad hoc network (AHN) is a packet switched
    network (AHN), said transmission information (TI, TI',
    TI'') comprises one or more transmission packets (IP1-
    IP5), and said acknowledgement information (ACTAN,
    ACTAN', ACTAN'') comprises one or more acknowledgment
    packets (ACK1-ACK5).

8. The gateway (GW; Fig. 4c) according to claim 3 and 7,
    further characterized in that
    said transmission characteristics determining unit
    (TIM) is adapted to determine said transmission
    characteristics (TCH) for each acknowledged
    transmission packet (IP1-IP5) of said transmission
    information (TI, TI', TI'').

9. The gateway (GW; Fig. 4c) according to claim 4 and 7,
    further characterized in that
    said transmission information memory (TIS') is adapted
    to store said transmission characteristics (TCH) for
    each transmission packet (IP1-IP5) of said
    transmission information (TI, TI', TI'').

10. The gateway (GW; Fig. 6; Fig. 4c; Fig. 7) according to
    claim 7, *further characterized by*
    a sequence number insertion unit (SNI) adapted to
    insert into each transmission packet (IP1-IP5) a
    sequence number (SN; 1, 2, 3, 4, 5) indicating the
    transmission order of the respective transmission
    packet (IP1-IP5) in a sequence of transmission packets
    (IP1-IP5).

11. The gateway (GW; Fig. 6; Fig. 7) according to claim
    10,

further characterized by

a transmission window unit (WIN) adapted to set a
predetermined transmission window (WT) for said
transmission/reception unit (TRG) to successively
transmit transmission packets (IP1-IP3) to said second
terminal node (RN1-RN4; MN); wherein

said transmission/reception unit (TRG) is adapted to
successively transmit to said second terminal node
(RN1-RN4; MN) transmission packets (IP1-IP3) within
said transmission window (WT); and wherein
said transmission/reception unit (TRG) is adapted to
slide said transmission window (WT) one or more
packets to form a new transmission window (WT', WT'',
WT''') and to successively transmit to said second
terminal node (RN1-RN4; MN) one or more successive
transmission packets (IP4, IP5) within said new
transmission window (WT', WT'', WT''') which have not
already been transmitted in the previous transmission
window (WT) whenever the receipt of an acknowledgment
packet (ACK1, ACK2), acknowledging the receipt of a
transmission packet (IP1-IP3) of the previous
transmission window (WT), is detected by said
acknowledgment information detection unit (ACKM).

12. The gateway (GW; Fig. 7) according to claim 11,
    further characterized in that
    said transmission window (WT) is one of the group
    consisting of a transmission time window indicating a
    predetermined transmission time period, a transmission
    window number of successive transmission packets, and
    a transmission window data amount indicating a
    predetermined amount of data to be transmitted in one
    or more of said successive transmission packets (IP1-
    IP3).

13. The gateway (GW) according to claim 12,
     further characterized in that
     said transmission window data amount (e.g. 1 MB) is
     the product between the transmission speed (TRT; e.g.
     1 MB/s) on the transmission route (MR, AR) between
     said gateway (GW) and said second terminal (RN1-RN4;
     MN) and the round trip time (RTT, e.g 1s) which is the
     minimum time the gateway (GW) has to wait between
     transmitting a transmission packet (IP1-IP3) and
     receiving an acknowledgment packet (ACK1-ACK3)
     thereof.

14. The gateway (GW; Fig. 8, 9) according to claim 11,
     further characterized by
     a lost packet detector (LPD) adapted to detect that an
     acknowledgement packet (ACK2; Fig. 8) or a
     transmission packet (IP2; Fig. 9) has gone lost during
     its transmission if after transmission of a
     predetermined number of transmission packets (IP1-IP3)
     in the transmission window set by said transmission
     window unit (WIN), the sequence numbers (SN) in
     successive acknowledgment packets (ACK1, ACK3) do not
     match with those set in the successive transmission
     packets (IP1-IP3).

15. The gateway (GW; Fig. 10) according to claim 11,
     further characterized by
     said lost packet detector (LPD) comprising a timer (T)
     adapted to count a predetermined time duration (ΔT),
     said timer (T) being started with each new
     transmission of a transmission packet (IP1-IP3), being
     stopped if an acknowledgement packet is received for
     the last transmitted transmission packet within said
     predetermined time duration (ΔT) or ,if not being
     stopped by the receipt of an acknowledgment packet,

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said timer (T) expiring, wherein said TRN stops
transmission.

16.   The gateway (GW; Fig. 11; Fig. 8, 9) according to
        claim 7, *further characterized by*
        an acknowledgment request unit (SOL) adapted to
        transmit to said second terminal node (MN) an
        acknowledgment request packet (SOL_ACK3) including a
        predetermined sequence number (SN) of a transmission
        packet (IP3) which was transmitted but for which no
        acknowledgement information has as yet been detected
        by said acknowledgment information detection unit
        (ACKM), said acknowledgment request message (SOL_ACK3)
        requesting from said second terminal node (MN) the
        transmission of an acknowledgment packet (ACK3)
        acknowledging the receipt of the transmission packet
        (IP3) having said predetermined sequence number (IP3).

17.   The gateway (GW; Fig. 11; Fig. 8, 9) according to
        claim 16 and 15, *further characterized in that*
        if said timer (T) times out and no acknowledgment
        information is detected by said acknowledgment
        information detection unit (ACKM) within said time
        duration after transmission of the last transmission
        packet (IP3) in said transmission window (WT), said
        acknowledgment request unit (SOL) is adapted to
        transmit to said second terminal node (MN) an
        acknowledgment request packet (SOL_ACK3) including the
        sequence number (SN) of the last transmission packet
        (IP3) transmitted in the transmission window (WT).

18.   The gateway (GW; Fig. 12; Fig. 8, 9) according to
        claim 15 and 17, *further characterized in that*
        said timer (T) is also started when said
        acknowledgment request unit (SOL) starts transmitting
        said acknowledgment request package (SOL_ACK3),
        wherein if said timer (T) times out thereafter and no

acknowledgment information is detected by said
acknowledgment information detection unit (ACKM)
within said time duration after transmission of said
acknowledgment request package (SOL_ACK3), said
transmission/reception unit (TRG) stops transmission
of further transmission packets.

19. The gateway (GW; Fig. 13, Fig. 14) according to claim
     1,
     further characterized by
     a route check unit (RC) adapted to detect whether a
     transmission route (MR, AR) to said second terminal
     node (MN) exists.

20. The gateway (GW; Fig. 13) according to claim 19 and
     17,
     further characterized by
     said acknowledgment request unit (SOL) is adapted to
     transmit to said second terminal node (MN) said
     acknowledgment request packet (SOL_ACK3) if after said
     timer times out, said route check unit (RC) detects
     that a transmission route (MR, AR) exists.

21. The gateway (GW; Fig. 14) according to claim 19 and
     17,
     further characterized by
     said transmission/reception unit (TRG) stops
     transmission of further transmission packets if after
     said timer times out, said route check unit (RC)
     detects that no transmission route (MR, AR) exists.

22. The gateway (GW; Fig. 15) according to claim 7,
     further characterized in that
     said transmission/reception unit (TRG) is adapted to
     retransmit an already transmitted transmission packet
     (IP2) having a specific sequence number (2) in

response to receiving a retransmission request packet
(SEL_ACK3(2); SEL_ACK4(2)) including said specific
sequence number (2; 2) from said second terminal node
(MN).

23. The gateway (GW; Fig. 16a, Fig. 16b) according to
    claim 1, *further characterized in that*
    said transmission/reception unit (TRG) comprises a
    <u>first</u> <u>tunnel</u> setup unit (IPTUN) for setting up a first
    tunnel link (TUN1) between said gateway (GW) and said
    second terminal node (MN), wherein said
    transmission/reception unit (TRG) transmits said
    transmission information (TI, TI', TI'') and receives
    said acknowledgment information (ACTAN, ACTAN',
    ACTAN'') to and from said second terminal node (MN)
    respectively through said first tunnel link (TUN1).

24. The gateway (GW; Fig. 16a, Fig. 16b) according to
    claim 7 an claim 23, *further characterized in that*
    said first tunnel setup unit (IPTUN) sets up said
    first tunnel link (TUN1) by encapsulating transmission
    packets (IPx) into modified transmission packets
    (IPxx) generated and transmitted by said
    transmission/reception unit (TRG).

25. The gateway (GW; Fig. 16a, Fig. 16b) according to
    claim 24, *further characterized in that*
    said first tunnel setup unit (IPTUN) is adapted to
    respectively encapsulate a transmission packet (IPx)
    received from said first terminal node (CN) and having
    a global source address (SAC; S:1.1) of said first
    terminal node (CN) and a global destination address
    (GAN; D:2.2) of said second terminal node (MN) into a
    modified transmission packet (IPxx) having an ad hoc
    source address (ADAG; S:A) of said gateway (GW) and an

ad hoc destination address (ADAN; D:D) of said second
terminal node (MN).

26. The gateway (GW; Fig. 17) according to claim 23,
     further characterized in that
     said transmission/reception unit (TRG) comprises a
     second tunnel setup unit (TCPTUN) for setting up a
     second tunnel link (TUN2) encapsulated within said
     first tunnel link (TUN1) between said gateway (GW) and
     said second terminal node (MN), wherein said
     transmission/reception unit (TRG) transmits said
     transmission information (TI, TI', TI'') and receives
     said acknowledgment information (ACTAN, ACTAN',
     ACTAN'') to and from said second terminal node (MN)
     respectively by using said second tunnel link (TUN2)
     encapsulated within said first tunnel link (TUN1).

27. The gateway (GW; Fig. 17) according to claim 7 and
     claim 26 and 24, *further characterized in that*
     said second tunnel setup unit (TCPTUN) sets up said
     second tunnel link (TUN2) by encapsulating
     transmission packets (IPx) received from said first
     terminal node (CN) into modified transmission packets
     (IPx') generated by said transmission/reception unit
     (TRG); and

     said transmission packets (IPx'), which are
     encapsulated by said first tunnel setup unit (IPTUN)
     into said modified transmission packets (IPxx')
     transmitted by said transmission/reception unit (TRG),
     are said modified transmission packets (IPx')
     encapsulated by said second tunnel setup unit
     (TCPTUN).

28. The gateway (GW; Fig. 16a, Fig. 16b; Fig. 18)
     according to claim 23, *further characterized in that*

said first tunnel set up unit (IPTUN) sets up as said
first tunnel link (TUN1) an IP (Internet Protocol)
protocol tunnel.

29. The gateway (GW; Fig. 17; Fig. 18) according to claim
     26, *further characterized in that*
     said second tunnel set up unit (TCPTUN) sets up as
     said second tunnel link (TUN2) a TCP (Transfer Control
     Protocol) protocol or a stack of L2TP (Layer-2-
     Tunneling-Protocol) protocol, a PPP (Point-to-Point
     Protocol) protocol and a UDP (User Datagram Protocol)
     protocol.

30. A terminal node (RN1-RN4; MN; Fig. 5a; Fig. 6) of an
     ad hoc network (AHN) for exchanging transmission
     information (TI, TI', TI'') with another terminal node
     (CN) of another network (IN) connected to said ad hoc
     network (AHN) through a gateway (GW), comprising:

     a)   a transmission/reception unit (TRN) adapted to
          receive transmission information (TI, TI', TI'')
          from said another terminal node (CN) through said
          gateway (GW); and

     b)   an acknowledgment information transmission unit
          (ACKSN) adapted to transmit to said gateway (GW)
          acknowledgment information (ACTAN, ACTAN',
          ACTAN'') acknowledging that said
          transmission/reception unit (TRN) has received
          said transmission information (TI, TI', TI'').

31. The terminal node (RN1-RN4; MN) according to claim 30,
     further characterized in that
     said ad hoc network (AHN) is a packet switched network
     (AHN), said transmission information (TI, TI', TI'')
     comprises one or more transmission packets (IP1-IP5),

and said acknowledgement information (ACTAN, ACTAN',
ACTAN'') comprises one or more acknowledgment packets
(ACK1-ACK5).

32.　The terminal node (RN1-RN4; MN; Fig. 7) according to
claim 31, *further characterized by*
a sequence number determining unit (SND) adapted to
determine in each received packet (IP1-IP5, Fig. 7;
SOL_ACK3, Fig. 11) a sequence number (SN; 1, 2, 3, 4,
5) indicating the transmission order of the respective
transmission packet (IP1-IP5) in a sequence of
transmission packets (IP1-IP5); wherein

said acknowledgment information transmission unit
(ACKSN) is adapted to transmit to said gateway (GW)
acknowledgment packets (ACK1-ACK5) respectively
containing the detected sequence number (SN; 1, 2, 3,
4, 5) of the received packet (IP1-IP5) whose receipt
is to be acknowledged with said respective
acknowledgment packet (ACK1-ACK5).

33.　The terminal node (RN1-RN4; MN; Fig. 11) according to
claim 32, *further characterized in that*
said sequence number determining unit (SND) is adapted
to determine a sequence number (SN; 1, 2, 3, 4, 5) in
a received transmission packet (IP1-IP3) or in an
received acknowledgment request packet (SOL_ACK3),
said acknowledgment request message (SOL_ACK3)
requesting from said second terminal node (MN) the
transmission of an acknowledgment packet (ACK3)
acknowledging the receipt of the transmission packet
(IP3) having said determined sequence number (IP3).

34.　The terminal node (RN1-RN4; MN; Fig. 15) according to
claim 30, *further characterized by*

a packet retransmission request unit (ARQ) adapted to transmit to said gateway (GW) a retransmission request packet (SEL_ACK3(2); SEL_ACK4(2)) including a sequence number (2; 2) of a transmission packet (IP2; IP2) which is requested to be retransmitted from said gateway (GW).

35. The terminal node (RN1-RN4; MN; Fig. 16a, 16b) according to claim 30, *further characterized in that* said transmission/reception unit (TRN) comprise a first tunnel setup unit (TUN1) for setting up a first tunnel link (TUN1) between said second terminal node (MN) and said gateway (GW), wherein said transmission/reception unit (TRG) receives said transmission information (TI, TI', TI'') and transmits said acknowledgment information (ACTAN, ACTAN', ACTAN'') from and to said gateway (GW) respectively through said first tunnel link (TUN1).

36. The terminal node (RN1-RN4; MN; Fig. 16a, 16b) according to claim 35, *further characterized in that* said transmission/reception unit (TRG) comprises a second tunnel setup unit (TCPTUN) for setting up a second tunnel link (TUN2) encapsulated within said first tunnel link (TUN1) between said terminal node (MN) and said gateway (GW), wherein said transmission/reception unit (TRG) receives said transmission information (RI, TI', TI'') and transmits said acknowledgment information (ACTAN, ACTAN', ACTAN'') from and to said gateway (GW) respectively through said second tunnel link (TUN2) encapsulated within said first tunnel link (TUN1).

37. A communication system (SYS) including a first network (IN) with at least a first terminal node (CN), an ad hoc network (AHN) with at least a second terminal node

(RN1-RN4; MN), and a gateway (GW; Fig. 5a; Fig. 6) for forwarding transmission information (TI, TI', TI'') between said first terminal node (CN) of said first network (IN) and said second terminal node (RN1-RN4; MN) of said ad hoc network (AHN), wherein said gateway (GW) is constituted in accordance with on or more of claims 1 to 30 and wherein said second terminal node (RN1-RN4; MN) is constituted in accordance with one or more of claims 30 to 36.

38.   A method (Fig. 5b) for forwarding transmission information (TI, TI', TI'') between a first terminal node (CN) of a first network (IN) of a communication system (SYS) and a second terminal node (RN1-RN4; MN) of an ad hoc network (AHN) of said communication system (SYS), comprising the following steps in a gateway (GW) of said communication system (SYS):

a)   receiving (S5c1), in said gateway (GW) of said communication system (SS), transmission information (TI, TI', TI'') from said first terminal node (CN) and transmitting (S5c2), from said gateway (GW), said transmission information (TI, TI', TI'') to said second terminal node (RN1-RN4; MN);

b)   detecting (S5c5), in said gateway (GW), the receipt of acknowledgment information (ACTAN, ACTAN', ACTAN'') from said second terminal node (RN1-RN4; MN) acknowledging that said second terminal station (RN1-RN4; MN) has received said transmission information (TI, TI', TI'').

39.   A method (Fig. 5b) for forwarding transmission information (TI, TI', TI'') between a first terminal node (CN) of a first network (IN) of a communication

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system (SYS) and a second terminal node (RN1-RN4; MN)
of an ad hoc network (AHN) of said communication
system (SYS), comprising the following steps in said
second terminal node (MN):

a)   receiving (S5c3), in said second terminal node
      (MN) transmission information (TI, TI', TI'')
      from a gateway (GW) of said communication system
      (SYS); and

b)   transmitting (S5c4), from said second terminal
      node (MN), to said gateway (GW) acknowledgment
      information (ACTAN, ACTAN', ACTAN'')
      acknowledging that said second terminal node (MN)
      has received said transmission information (TI,
      TI', TI'').

40.   A method (Fig. 5b) for forwarding transmission
      information (TI, TI', TI'') between a first terminal
      node (CN) of a first network (IN) of a communication
      system (SYS) and a second terminal node (RN1-RN4; MN)
      of an ad hoc network (AHN) of said communication
      system (SYS), comprising the following steps in said
      communication system (SYS):

a1)   receiving (S5c1), in a gateway (GW) of said
      communication system (SS), transmission
      information (TI, TI', TI'') from said first
      terminal node (CN) and transmitting (S5c2), from
      said gateway (GW), said transmission information
      (TI, TI', TI'') to said second terminal node
      (RN1-RN4; MN);

a2)   receiving (S5c3), in said second terminal node
      (MN), said transmission information (TI, TI',
      TI'') from said gateway (GW);

b1)   transmitting (S5c4), from said second terminal
       node (MN), to said gateway (GW) acknowledgment
       information (ACTAN, ACTAN', ACTAN'')
       acknowledging that said second terminal node (MN)
       has received said transmission information (TI,
       TI', TI''); and

b2)   detecting (S5c5), in said gateway (GW), the
       receipt of said acknowledgment information
       (ACTAN, ACTAN', ACTAN'') from said second
       terminal node (RN1-RN4; MN) acknowledging that
       said second terminal station (RN1-RN4; MN) has
       received said transmission information (TI, TI',
       TI'').

41.   The method according to claim 38 or 40,
      further characterized by
      determining (S57), in said gateway (GW), charging
      information (CH) for the transmission of said
      transmission information (TI, TI', TI'') to said
      second terminal node (RN1-RN4; MN) if the receipt of
      acknowledgment information (ACTAN, ACTAN', ACTAN'')
      for the transmission of said transmission information
      (TI, TI', TI'') to said second terminal station (RN1-
      RN4; MN) is detected.

42.   The method according to claim 38 or 40,
      further characterized by
      determining (S54) transmission characteristics (TCH)
      of the transmission of said transmission information
      (TI, TI', TI'') to said second terminal node (RN1-RN4;
      MN).

43.   The method according to claim 38 or 40,
      further characterized by

determining (S54) as said transmission characteristics
(TCH) one or more selected from the group consisting
of a data amount (DAM), a transmission speed (TRT), a
transmission route (RT; MR, AR) along which said
transmission information (TI, TI', TI'') has been
transmitted to said second terminal node (RN1-RN4;
MN), and a delay time of the packet transmission along
the transmission route to the second terminal node
(MN).

44. The method according to claim 42 and 43,
   further characterized by
   determining (S57) said charging information (CH) on
   the basis of said transmission characteristics (TCH).

45. The method according to claim 39 or 40 or 41,
   further characterized in that
   said second ad hoc network (AHN) is a packet switched
   network (AHN), said transmission information (TI, TI',
   TI'') comprises one or more transmission packets (IP1-
   IP5), and said acknowledgement information (ACTAN,
   ACTAN', ACTAN'') comprises one or more acknowledgment
   packets (ACK1-ACK5).

46. The method according to claim 45,
   further characterized by
   inserting (S71) into each transmission packet (IP1-
   IP5) a sequence number (SN; 1, 2, 3, 4, 5) indicating
   the transmission order of the respective transmission
   packet (IP1-IP5) in a sequence of transmission packets
   (IP1-IP5).

47. The method according to claim 45,
   further characterized by
   setting (S7111) a predetermined transmission window
   (WT) to successively transmit transmission packets

(IP1-IP3) to said second terminal node (RN1-RN4; MN); and

successively transmitting (S72, S721, S722) to said second terminal node (RN1-RN4; MN) transmission packets (IP1-IP3) within said transmission window (WT);

detecting (S61) the receipt of an acknowledgment packet (ACK1-ACK3) from said second terminal node (RN1-RN4) for said transmission packets (IP1-IP3) and sliding said transmission window (WT) one or more packets to form a new transmission window (WT', WT'', WT'''); and
successively transmitting to said second terminal node (RN1-RN4; MN) one or more successive transmission packets (IP4, IP5) within said new transmission window (WT', WT'', WT''') which have not already been transmitted in the previous transmission window (WT).

48. The method according to claim 47,
further characterized in that
said transmission window (WT) is one of the group consisting of a transmission time window indicating a predetermined transmission time period, a transmission window number of successive transmission packets, and a transmission window data amount indicating a predetermined amount of data to be transmitted in one or more of said successive transmission packets (IP1-IP3).

49. The method according to claim 45,
further characterized by
detecting (S81, S82; S91, S92) that an acknowledgement packet (ACK2; Fig. 8) or a transmission packet (IP2; Fig. 9) has gone lost during its transmission if after

transmission of a predetermined number of transmission
packets (IP1-IP3) in the transmission window set by
said transmission window unit (WIN), the sequence
numbers (SN) in successive acknowledgment packets
(ACK1, ACK3) do not match with those set in the
successive transmission packets (IP1-IP3).

50.   The method according to claim 45,
      further characterized by
      counting (S103', S108'), with a timer (T) in said
      gateway (GW), a predetermined time duration (ΔT), said
      timer (T) being started with each new transmission of
      a transmission packet (IP1-IP3) and being stopped if
      an acknowledgement packet is received for the last
      transmitted transmission packet within said
      predetermined time duration (ΔT).

51.   The method according to claim 39 or 41,
      further characterized by
      transmitting (S114), from said gateway (GW) to said
      second terminal node (MN), an acknowledgment request
      packet (SOL_ACK3) including a predetermined sequence
      number (SN) of a transmission packet (IP3) which was
      transmitted but for which no acknowledgement
      information has as yet been detected in said gateway
      (GW), said acknowledgment request message (SOL_ACK)
      requesting from said second terminal node (MN) the
      transmission of an acknowledgment packet (ACK3)
      acknowledging the receipt of the transmission packet
      (IP3) having said predetermined sequence number (IP3).

52.   The method according to claim 45 and 46,
      further characterized in that
      if said timer (T) times out and no acknowledgment
      information is detected by said acknowledgment
      information detection unit (ACKM) within said time
      duration after transmission of the last transmission

packet (IP3) in said transmission window, transmitting
(S114) to said second terminal node (MN) an
acknowledgment request packet (SOL_ACK3) including the
sequence number (SN) of the last transmission packet
(IP3) transmitted in the transmission window.

53.   The method according to claim 43 and 45,
       further characterized in that
       said timer (T) is also started when transmitting said
       acknowledgment request package (SOL_ACK3), wherein if
       said timer (T) times out thereafter and no
       acknowledgment information is detected within said
       time duration after transmission of said
       acknowledgment request package (SOL_ACK3), the
       transmission of further transmission packets is
       stopped.

54.   The method according to claim 38 or 41,
       further characterized by
       detecting (S132, S142) whether a transmission route
       (MR, AR) to said second terminal node (MN) exists.

55.   The method according to claim 45,
       further characterized by
       re-transmitting (S157, S159) an already transmitted
       transmission packet (IP2) having a specific sequence
       number (2) in response to receiving a retransmission
       request packet (SEL_ACK3(2); SEL_ACK4(2)) including
       said specific sequence number (2; 2) from said second
       terminal node (MN).

56.   The method according to claim 38 or 41,
       further characterized by
       setting up a first tunnel link (TUN1) between said
       gateway (GA) and said second terminal node (MN) and

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transmitting said transmission information (RI, TI', TI'') and receiving said acknowledgment information (ACTAN, ACTAN', ACTAN'') to and from said second terminal node (MN) respectively through said first tunnel link (TUN1).

57. The method according to claim 44 and claim 56,
     further characterized by
     setting up said first tunnel link (TUN1) by encapsulating transmission packets (IPx) received from said first terminal node (CN) into modified transmission packets (IPxx).

58. The method according to claim 57,
     further characterized by
     setting up said first tunnel (IPTUN) by respectively encapsulating a transmission packet (IPx) received from said first terminal node (CN) and having a global source address (SAC; S:1.1) of said first terminal node (CN) and a global destination address (GAN; D:2.2) of said second terminal node (MN) into a modified transmission packet (IPxx) having an ad hoc source address (ADAG; S:A) of said gateway (GW) and an ad hoc destination address (ADAN; D:D) of said second terminal node (MN).

59. The method according to claim 56,
     further characterized by
     setting up a second tunnel link (TUN2) encapsulated within said first tunnel link (TUN1) between said gateway (GA) and said second terminal node (MN), wherein said transmission information (RI, TI', TI'') is transmitted and said acknowledgment information (ACTAN, ACTAN', ACTAN'') is received to and from said second terminal node (MN) respectively through said

second tunnel link (TUN2) encapsulated within said
first tunnel link (TUN1).

60. The method according to claim 45 and claim 46 and 47,
further characterized in that
said setting up of said second tunnel link (TUN2) is
performed by encapsulating transmission packets (IPx)
received from said first terminal node (CN) into
modified transmission packets (IPx'); and

said transmission packets (IPx'), which are
encapsulated into said modified transmission packets
(IPxx') in said first tunnel (IPTUN), are said
modified transmission packets (IPx') encapsulated by
said second tunnel setup unit (TCPTUN).

61. The method according to claim 39,
further characterized in that
said ad hoc network (AHN) is a packet switched network
(AHN), said transmission information (TI, TI', TI'')
comprises one or more transmission packets (IP1-IP5),
and said acknowledgement information (ACTAN, ACTAN',
ACTAN'') comprises one or more acknowledgment packets
(ACK1-ACK5).

62. The method according to claim 61,
further characterized by
determining (S73) in each received packet (IP1-IP5,
Fig. 7; SOL_ACK3, Fig. 11) a sequence number (SN; 1,
2, 3, 4, 5) indicating the transmission order of the
respective transmission packet (IP1-IP5) in a sequence
of transmission packets (IP1-IP5); and

transmitting (S74) to said gateway (GW) acknowledgment
packets (ACK1-ACK5) respectively containing the
detected sequence number (SN; 1, 2, 3, 4, 5) of the
received packet (IP1-IP5) whose receipt is to be

acknowledged with said respective acknowledgment
packet (ACK1-ACK5).

63. The method according to claim 62,
    further characterized by
    determining (S75) a sequence number (SN; 1, 2, 3, 4,
    5) in a received transmission packet (IP1-IP3) or in a
    received acknowledgment request packet (SOL_ACK3),
    said acknowledgment request message (SOL_ACK3)
    requesting from said second terminal node (MN) the
    transmission of an acknowledgment packet (ACK3)
    acknowledging the receipt of the transmission packet
    (IP3) having said determined sequence number (IP3).

64. The method according to claim 63,
    further characterized by
    transmitting (S55'') to said gateway (GW) a
    retransmission request packet (SEL_ACK3(2);
    SEL_ACK4(2)) including a sequence number (2; 2) of a
    transmission packet (IP2; IP2) which is requested to
    be retransmitted from said gateway (GW).

65. The method according to claim 39,
    further characterized by
    setting up (S52', S56'; S52'') a first or first and
    second tunnel link (TUN1, TUN2) between said second
    terminal node (MN) and said gateway (GW) wherein
    reception of said transmission information (TI, TI',
    TI'') and said transmission of said acknowledgment
    information (ACTAN, ACTAN', ACTAN'') from and to said
    gateway (GW) is performed respectively through said
    first tunnel link (TUN1) or through said second tunnel
    link (TUN2) encapsulated in said first tunnel link
    (TUN1).

66.   A computer program product, comprising code sections
      for respectively carrying out the functions of the
      respective units of the gateway (GW) in accordance
      with one or more of claims 1 to 30.

67.   A computer program product, comprising code sections
      for respectively carrying out the functions of the
      respective units of the terminal node (RN1-RN4; MN) in
      accordance with one or more of claims 31 to 38.

68.   A computer program product, comprising code sections
      adapted to respectively carry out one or more of the
      method steps in accordance with one or more of the
      method claims 40 to 67.